23 March 2000

MEMORANDUM FOR ENGINEERING AND DESIGN DIVISION

Subj: A/E REVIEW POLICY

Encl: (1) Branch A/E Review Guidance

1. As demonstrated in the recent Code 04 Staff Survey, the current A/E review process is well understood by all and felt to be a success, both in application and quality of designs produced. However, as in years past, we continue to go back to our A/Es for second and third Final Submittals, creating havoc in reaching our execution milestones. This is an indication that we are shouldering far too much of the technical responsibility for the work. During the October 1999 offsite conference the Branch Managers analyzed our current A/E review process to define our administrative and technical responsibilities. Subsequently, a revised A/E review process was developed which, when fully implemented, will place all of the technical responsibilities squarely where they belong – on the A/E.

2. Our timing for reviewing this policy and making this change also coincides with our roll-out of EBS and electronic signatures. A/E Final Submittals will be in PDF format with original electronic signatures, making re-submittals totally impractical.

3. The framework for reviewing project submittals remains essentially the same with emphasis shifting toward administrative, contractual and technical oversight vice detailed discipline verification and control. The most significant change in our process occurs at the Final Submittal stage, when Code 04 will release all projects within three working days of submission. In order to achieve this goal it is essential that all review and coordination efforts be moved forward in the process, such that the **final review becomes only a comment back check and signing.** A request for a Second Final is generally not an option; the amendment process will handle all additional comments and corrections.

4. This will place additional pressure on us to insure all submitted comments have been incorporated. It will also be incumbent upon Project Management, Construction, Utilities and others who review designs to meet established review dates, and recognize that any comments forwarded after the due date may not be incorporated. Late comments which impact the project's life safety, cost, schedule or violate criteria are the only ones which may delay the advertisement process. Other significant comments will be incorporated by amendment or left out entirely. The message is clear: all of us must adhere to project schedules if execution is to achieve the lofty heights expected of us.

5. Enclosure (1) provides Branch specific guidance to assist you in reviewing project elements at the various submittal stages. Our intent is an earlier focus on the key aspects of the project to expedite its success. Our review should check that the project is within scope and budget; health, safety, and functional requirements and criteria are addressed; sound engineering practice has been followed; and project documents are adequate to construct the intended facility. You should advise the A/E of obvious errors or omissions noted during your review, but **detailed**

checking and quality control of the design documents is the responsibility of the A/E of record. At the completion of your review, you should have a level of confidence that the A/E has fulfilled their contractual obligations, and it can be reasonably expected the project will be successfully constructed without significant additional changes. Use good judgement to adjust the necessary review effort for the project at hand bringing questionable projects to your supervisor's attention immediately for further discussion. If these discussions recommend that a resubmittal be requested at either the 35% or Prefinal Submission reviews, notify the AIC/EIC. With the concurrence of the Lead Branch Manager, an interim Performance Evaluation will be prepared and forwarded to the A/E with an endorsement letter signed by Code 04 outlining our disappointment with the progress of the design.

6. With the aforementioned rollout of EBS and electronic signatures will come training sessions with the A/Es. We will incorporate this process change into the training, since sending back final electronic submittals will not be feasible. A target date of June 2000 has been set for receipt of full electronic documents, and we'll target that same date for enforcement of this policy.

W. H. CRONE, P.E.
Director
Engineering and Design Division

Copy to:
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09/00

A/E Review Guidance (Code 401)

35 % Submission (15 working day turnaround)

Basis of Design

- Verify that FACD or design charette issues are addressed.
- Verify that the DD1391 scope (SF, ECC, and special design features) has been met.
- Verify that handicap accessibility provisions have been included. Document "able-bodied military" where appropriate.
- Verify that architectural compatibility has been addressed – determine if ARB needs to meet.
- Verify roof system selection.
- Verify wall and roof insulation.
- Spot-check conformance to the NAVFAC Elevator Design Checklist for selection of elevator type.
- Verify that sustainable design has been addressed, and meets requirements of the A&E Guide.
- Verify that security requirements have been addressed.
- Verify doors and windows.
- Verify interior finishes.
- Verify exterior material selection considering appearance, maintainability and intended building usage.

Specifications

Drawings

- Verify that floor plan is compatible with function, and meets applicable space criteria.
- Review building floor plan for flexibility to accommodate future alterations and additions consistent with building usage.
- Verify circulation and separation of services (employees, visitors, loading dock, etc.).
- Verify compliance to handicap criteria.
- Verify roof drainage system.
- Review building elevations for potential architectural compatibility issues.
- Review building elevations for appropriate entrance identification.
- Review wall sections to insure integrity of the building envelope.

Calculations

- Review square footage calculations to verify that scope has been met.
- Verify that LEEDS calculations have met appropriate sustainable design targets.

Prefinal Submission (15 working day turnaround)

Specifications

Drawings

- Verify that architectural compatibility issues were addressed.
- Verify roof system selection and detailing.
- Verify that an exterior finish/color schedule has been provided.
- Verify integrity of building envelope.
- Spot-check conformance with the NAVFAC Elevator Design Checklist for elevator detailing (wall ratings, machine room, emergency power, etc.)
- Verify flashing at windows and exterior doors.
- Verify that sustainable design issues have been incorporated.

Calculations

- Verify that area calculations are still appropriate.
- Verify that LEEDS calculations are still valid.

Previous Review Comments

- Check A/E response and coordination.

Other

- Complete Branch sign-off sheet.
- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Specifications

Drawings

- Sign Tracings.

Calculations

Previous Review Comments

- Check A/E response and coordination.

Other

- Adjust A/E performance rating if necessary.

A/E Review Guidance (Code 402)

35 % Submission (15 working day turnaround)

Basis of Design

- Check loading criteria (Wind, Live, Snow, Force Protection, Seismic, etc…)

Specifications

Drawings

- Check that Plans / Sections agree with intent of Calculations and Basis of Design.

Calculations

- Check application of loading criteria (Wind, Live, Snow, Force Protection, Seismic, etc…)
- Check analysis of lateral force resisting system; does a clear load path to the foundation exist.

Prefinal Submission (15 working day turnaround)

Specifications

- Check that material strength and properties agree on the drawings and in the calculations.

Drawings

- Check loading criteria (Wind, Live, Snow, Force Protection, Seismic, etc…)
- Check that list of applicable design codes is current and correct.
- Check accuracy and completeness of load schedule (Live, Snow, Wind, Seismic coefficients, etc.)
- Check frost penetration depth and foundation bearing capacity.
- Check consistence of column lines between roof, foundation and floor plans.
- Check lateral force resisting system.
- Check metal deck anchorage for diaphragm action and wind uplift.
- Check that expansion joints run through the building.
- Check for crack control joints in walls and slabs.
- Check for supports of Mechanical & Electrical equipment.
- Check for minimum seismic reinforcement for masonry.
- Check special loading conditions such as cranes, heavy equipment, vibration isolation, etc.
- Check for reinforcing and support for exterior wind walls.
- Spot-check coordination between structural drawings and other disciplines.

- Spot-check for conformance with the NAVFAC Elevator Design Check List.

Calculations

- Check application of loading criteria (Wind, Live, Snow, Hardening, Seismic, etc…)
- Check analysis of lateral force resisting system; does a clear load path to the foundation exist.
- Spot-check that calculations agree with drawings and specifications.

Previous Review Comments

- Check A/E response and coordination.

Other

- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Specifications

Drawings

- Sign Tracings.

Calculations

Previous Review Comments

- Check A/E response and coordination.

Other

- Adjust A/E performance rating if necessary.

A/E Review Guidance (Code 403)

15% E-1 Submission (3 day turnaround)

- Review and Approve, or modify, submitted HVAC system alternatives (E-1 Form).

35 % Submission (15 working day turnaround)

Basis of Design

- Verify selected HVAC system is appropriate with respect to application and station capabilities.
- Verify HVAC system selected has lowest LCC and that the calculated Energy Budget is below the Design Energy Target.
- Verify correct heating utility source (gas, steam, electric) selection and supporting economic analysis.
- Verify design is in accordance with project scope and station policy.
- Verify outside air amount and conditioning approach.

Drawings

- Verify mechanical utility routing.
- Verify correct equipment placement to facilitate maintenance and to minimize noise transmission.
- Verify correct zoning.

Calculations

- Verify HVAC load calculations for correct inside and outside design conditions, U-values, lighting loads, ventilation air amount and load.
- Verify plumbing fixture unit calculations and domestic hot water storage tank size.
- Review Energy analysis input and output.

Prefinal Submission (15 working day turnaround)

Specifications

- Check for conformance to the Mechanical Engineering Design Guide.
- Review major equipment sections.
- Review Controls and TABs sections.

Drawings

- Check for conformance to the Mechanical Engineering Design Guide.

- Verify correct plan, section and detail presentation.
- Verify equipment accessibility and maintainability.
- Consider noise from the HVAC system.
- Verify that IAQ has been adequately addressed.
- Verify correct DDC system.
- Verify compliance with scope and station policies.
- Verify appropriate use of balancing dampers and valves.

Calculations

- Check for conformance to the Mechanical Engineering Design Guide.
- Verify correct calculations and psychrometrics.
- Verify correct consideration of fan system effect.

Previous Review Comments

- Check A/E response and coordination.

Other

- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Specifications

Drawings

- Sign Tracings.

Calculations

Previous Review Comments

- Check A/E response and coordination.

Other

- Adjust A/E performance rating if necessary.

A/E Review Guidance (Code 404)

35 % Submission (15 working day turnaround)

Basis of Design

- Check for Scope conformance.
- Communicate Lessons Learned.
- Communicate client requirements and preferences.
- Check that all Basis of Design items identified in the Electrical Engineering Design Guide are addressed.

Specifications

Drawings

- Check for inclusion of required Legends, Plans, and Riser Diagrams.
- Check for sufficient quantity and appropriate location of telephone outlets, convenience receptacles, and lighting switches.

Calculations

- Check for inclusion of required calculations.

Prefinal Submission (15 working day turnaround)

Specifications

- Check for inclusion of appropriate specification sections and products.
- Review Spec Sections 16272, 16273, and the liquid-filled transformer paragraphs of 16301, 16360, and 16361.

Drawings

- Check for conformance to the Electrical Engineering Design Guide.
- Check for inclusion and completeness of Grounding Diagram.
- Spot-check coordination between Electrical Drawings and other disciplines.
- Spot-check for conformance with the NAVFAC Elevator Design Check List.

Calculations

- Check for inclusion of all required calculations.
- Spot-check calculations for agreement with drawings and specifications.

Previous Review Comments

- Check A/E response and coordination.

Other

- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Specifications

Drawings

- Sign Tracings.

Calculations

Previous Review Comments

- Check A/E response and coordination.

Other

- Adjust A/E performance rating if necessary.

A/E Review Guidance (Code 405)

35 % Submission (15 working day turnaround)

Basis of Design

- Verify site approval is complete.
- Verify that a personnel loading is identified.
- Verify 100-yr flood plain elevation is identified and is correct.
- Verify force protection and security requirements are identified.
- Verify clear zone criteria or explosive arc criteria are identified.
- Verify design vehicles are identified.
- Verify required permits are identified and project milestones include enough time to acquire them.
- Verify the status of hazardous materials existing on site and that remediation funds are included.
- Verify environmental assessment status and/or final decision.
- Verify that a waste stream analysis has been done and the water/wastewater treatment process chosen will produce the desired results.
- Verify that existing utilities have been certified as adequate for the project.

Specifications

- Verify specifications identify permits that construction contractor is required to acquire.

Drawings

- Verify finished floor elevation is above the 100-yr flood elevation.
- Verify benchmark and layout control is properly indicated on the plans.
- Verify system of units is consistent with the other disciplines.
- Verify handicap parking and access is provided.
- Verify traffic flow is consistent with design vehicles and the facility's function and that pedestrian flow is safe.
- Verify force protection and security are addressed.
- Verify that clear zone and/or ESQD arcs are accommodated.

Calculations

Prefinal Submission (15 working day turnaround)

Specifications

- Spot-check coordination of plans and specifications for special or unusual design features, i.e., package treatment systems, critical pumps, etc.

- Verify special scheduling and phasing requirements that will affect construction time and costs are included.

Drawings

- Verify grading plan contours and/or spot elevations provide positive drainage and a smooth transition to the surrounding topography; natural drainage patterns are not blocked; existing downstream systems are not overloaded; storm drain outlets are stabilized; building is protected against flooding if storm collection systems fail.
- Verify erosion control and storm water management measures are provided.
- Verify sections are provided for exterior surfaces (pavement, sidewalks, pavement patches, berms, etc).
- Spot-check details/sections and specification for coverage of contractor provided materials and systems.
- Verify connections to existing utility system are detailed.
- Verify joint restraint is specified/detailed for pressurized lines.
- Verify minimum cover is provided for underground utilities.
- Verify utility structure castings are designed and rated for expected traffic loads (POV, commercial, maintenance, industrial, aircraft, etc.).
- Verify thrust and freeze protection is provided for above ground utility appurtenances.
- Verify required permits have been obtained or application has been made.

Calculations

- Verify pavement loads used in the analysis are consistent with anticipated traffic.
- Verify gravity system flow velocities are between 2.5 and 10.o fps and pressure system velocities should not exceed 10.0 fps.

Previous Review Comments

- Check A/E response and coordination.

Other

- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Specifications

Drawings

- Sign Tracings.

Calculations

Previous Review Comments

- Check A/E response and coordination.
- Verify status of permits and advise management of critical outstanding issues.

Other

- Adjust A/E performance rating if necessary.

A/E Review Guidance (Code 406)

35 % Submission (15 working day turnaround)

Basis of Design

Specifications

- Review in conjunction with Basis of Design.
- Instruct A/E to use latest version of CCB and the Specification Preparation Manual at time of 100% spec preparation.
- If project includes demolition, (Asbestos/Lead/PCB's), check with PM to ensure testing is getting done.
- Provide guidance for preparation of EFA MED specs.
  - Provide copy of EFA MED database if necessary.
  - Instruct A/E to regionalize NFGS for project spec sections not in EFA MED database.
  - Describe Type I, II, and III products and related spec requirements.

Drawings

Calculations

Prefinal Submission (15 working day turnaround)

Specifications

- Verify latest version of CCB is being used.
- Verify LANTDIV regional guides and sample specs are used.
- Spot-check for ISR requirements.
- Spot-check submittal register for problems.
- Spot-check front end sections for problem issues (project description, special scheduling, activity restrictions, geographic requirements, etc.).
- Check any Navy criteria issues relative to the spec.
- Verify proper SGML/CSI format used for A/E created spec sections.
- Check "Big Ticket/Problem" items in each discipline.
  - Civil/Structural/Environmental
    - Asbestos/Lead/PCB's
  - Architectural
    - Paint
    - Roofing
    - Elevators
  - Electrical
    - Transformers

- EFA MED projects
  - Verify regionalization of specs.
  - Verify Type I, II, and III products specified.
- Spot-check for proprietary items.
- Verify Project Information Form is complete and correct.
- Coordinate additive/option items with the AIC/EIC.

Drawings

Calculations

Previous Review Comments
- Check A/E response and coordination

Other
- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Specifications
- Check 00120 for unit cost items, and additive bid items/option items.
- Sign Specifications.

Drawings

Calculations

Previous Review Comments
- Check A/E response and coordination.

Other
- Adjust A/E performance rating if necessary.

A/E Review Guidance (Code 407)

35 % Submission (15 working day turnaround)

Estimate

- Spot-check high cost items (80:20 rule).
- Check estimate against scope.
- Check wage rates, mark-ups, escalation and exchange rates.
- Spot-check high cost items in the design to confirm they are in the estimate and that quotes have been provided.
- Compare system costs to historical costs.
- Check for poorly defined systems. Are they accommodated adequately in the estimate?
- Compare the estimate to recent bid history and market conditions.
- Confirm that the estimate is within "Design-To" target and that additive/option bid items been identified. Notify PM and AIC/EIC if over "Design-To" target.
- Check the estimate for conformance to contract requirements ("Success" format, local pricing for overseas projects, etc.).
- Check the estimate for use of most recent cost database and estimating software.

Prefinal Submission (15 working day turnaround)

Estimate

- Spot-check high cost items (80:20 rule).
- Check the estimate against scope.
- Check wage rates, mark-ups, escalation and exchange rates.
- Spot-check high cost items in the design to confirm they are also in the estimate and that quotes have been provided.
- Compare system costs to historical costs.
- Compare the estimate to recent bid history and market conditions.
- Confirm that the estimate is within "Design-To" target and that additive/option bid items have been identified. Notify PM and AIC/EIC if over "Design-To" target.
- Check the estimate for conformance to contract requirements ("Success" format, local pricing for overseas projects, etc.).
- Check the estimate for use of most recent cost database and estimating software.
- Check the structure of the estimate for conformance to the bid sections of the specifications.

Previous Review Comments

- Check A/E response.

Other

- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Estimate

- Compare the estimate to recent bid history and market conditions.
- Confirm that the estimate is within "Design-To" target and that additive/option bid items have been identified? Notify PM and AIC/EIC if over "Design-To" target.

Previous Review Comments

- Check A/E response.

Other

- Provide rounded estimate summary sheet to the AIC/EIC
- If to be advertised somewhere other than LANTOPS, also provide to the AIC/EIC a copy of the estimate stamped "Official Use Only" in a sealed envelop.
- Adjust A/E performance rating if necessary.

A/E Review Guidance (Code 408)

35 % Submission (15 working day turnaround)

Basis of Design

- Check Civil BOD for description of water supply/distribution system.
- Check validity of water supply information.
- Perform criteria check of A/E's UBC & LSC analysis.
- Check Mechanical BOD for description of HVAC system, smoke control systems, interface with fire alarm system.
- Check Electrical BOD for description of distribution system and emergency power if provided.
- Check Fire Protection BOD for description of:
  - Building occupancy type and hazard.
  - Fire suppression system.
  - Water supply information.
  - Fire alarm systems and associated control functions.
    - Number and types of circuits, number of devices per circuit, and control functions for modifications to existing fire alarm systems.
- Check adequacy of fire protection based on proposed occupancy type and hazard.
- Verify correct application of fire protection criteria.

Specifications

- Check spec outline for inclusion of fire protection sections.

Drawings

- Check site plan for water distribution info, fire hydrant locations and fire department accessibility.
- Check Architectural floor plans for:
  - Life Safety Code compliance.
  - Fire rated partition locations.
  - Fire extinguisher/cabinet locations.
- Check all fire Protection Sheets for compliance with criteria.
  - Check fire sprinkler sheets for location of risers, standpipes, pumps.
  - Check fire sprinkler sheets for special systems details.
  - Check fire alarm sheets for location and spacing of alarm/supervisory initiating and notification appliances, FACP, fire pump controller, suppression control panels and other miscellaneous control devices and interfaces.
  - Check fire alarm riser diagram.
  - Verify location of point of connections to existing systemsis identified.

- Check Electrical for emergency lighting and exit signs, and one-line riser fire power to FACP and electric fire pumps (if provided).

Calculations

- Verify correct application of fire protection criteria.
- Check hydraulic design analysis.
- Check fire pump selection.
- Check special system calculations (AFFF/Special Agent).
- Check battery/circuit power calculations where existing fire alarm system are used/expanded.

Prefinal Submission (15 working day turnaround)

Specifications

- Check elevator spec for compliance with current NAVFAC criteria.
- Check correctness of referenced criteria with respect to current edition.
- Criteria check of fire protection specification sections.

Drawings

- See 35% Submission.

Calculations

Previous Review Comments

- Check A/E response and coordination.

Other

- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Specifications

Drawings

- Sign Tracings.

Calculations

Previous Review Comments

- Check A/E response and coordination.

Other

- Adjust A/E performance rating if necessary.

A/E Review Guidance (Code 411)

35% Submission (15 working day turnaround

Basis of Design

- Review methods and materials used for site preparation, foundation construction, and paving (i.e., check if materials are locally available and suited to function – cursory evaluation of life cycle costs, standard methods utilized in Iceland and Sigonella).
- Check if consideration given to factors influencing construction of overall facility that are "geographic specific" pitfalls/problems:
    a) Expansive soils - Rota, Puerto Rico, Signonella
    b) Historically difficult site prep soils such as "farmland" of Northwest Radio Station and NAS Oceana
- If airfield pavement related, verify conformance to applicable design/maintenance criteria.

Specifications

Drawings

- Check if plans reflect the recommendations of the geotechnical engineer (after reviewing geotechnical report).
- Verify that soil data shown on plans (preferred) or in specification, is complete with notes to explain soil boring logs and lab test results.
- Verify that groundwater information is presented clearly (data is consistent throughout boring log(s) and/or addressed in the specification)

Calculations

- Ensure inclusion of required calculations

Other

- Review geotechnical report

Prefinal Submission (15 working day turnaround

Specifications

- Spot-check that specifications are coordinated with plans (emphasis on earthwork, paving materials, and installation of piling).
- If rock or “hard “ material excavation is involved, check that rock/hard material can be quantified and method of payment is defined in the specification.

Drawings

- Check that bearing capacity used for design is stated on structural plan.
- Check that piling type, size, bid lengths and design loading is shown on structural plans.
- Verify that soil data shown on plans (preferred) or in specification, is complete with notes to explain logs and lab test results.
- Verify groundwater information is presented clearly (data is consistent throughout boring log(s) and/or addressed in the specification.
- If airfield pavement related, perform 'spot check' to ensure conformance with applicable criteria.
- On plans requiring large out of the ordinary excavations or blasting, check that technical approach assigns responsibility and is safe.

Calculations

- Ensure inclusion of required calculations

Previous Review Comments

- Check A/E response and coordination

Other

- Rate A/E on performance.

Final Submission (04 Release within 3 days)

Specifications

Drawings

- Sign Tracings

Calculations

Previous Review Comments

- Check A/E response and coordination

Other

- Adjust A/E performance rating if necessary